



SUSTAINABLE DESIGN CONSULTANTS

Sound Insulation Investigation

PROJECT:

WATERLOO WHARF, UXBRIDGE

UKAS ACCREDITED SOUND INSULATION

TEST REPORT REF: **12212-SI-02 RevB**

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Energy Rating Services

Second Floor, 27 -31 High Street, Kidlington, OX5 2DH

Tel: +44 (01865) 378885

Email: info@energyratingservices.com



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1.0 INTRODUCTION

Energy Rating Services in partnership with Clement Acoustics Ltd is to measure the sound insulation performance of an existing boat yard facade adjacent to a proposed development site at Waterloo Wharf, Uxbridge.

Proposals are to develop the land into residential dwellings at Waterloo Wharf. It is understood that the proposals include improving the sound insulation to reduce noise impact from the boat yard. Measurements were undertaken before improvement works were undertaken.

This report records the results of the sound insulation measurements and details the procedures used throughout the measurement and post-processing phases.

Measurements in this report were undertaken by Lewis Hart AMIOA and Andrew Thomas AMIOA on 28 March 2017 before upgrade works.

2.0 METHODOLOGY

2.1 Noise Breakout Assessment

During an on-site inspection potential noise breakout paths have been identified.

High volume “white” noise was generated from three loudspeakers in the proposed music playback areas of the property, positioned to obtain a diffuse sound field. A spatial average of the resulting one-third octave band noise levels between 20 Hz and 20 kHz was obtained by using a moving microphone technique over a minimum period of 15 seconds at each of two positions.

Measurements were then conducted immediately outside the building, in order to investigate the level of breakout noise through different transmission paths.

The duration of measurements ranged from 30-90 seconds, depending on the background noise pattern. Measurements were taken along the facade of the boatyard wall.

2.2 Instrumentation

The instrumentation used during testing is shown in Table 2.1 below.

Instrument	Manufacturer and Type	Serial Number
Sound level meter	01dB-Stell Black Solo	65784
Active Loudspeaker	RCF ART 310A	GEX05725
Active Loudspeaker	RCF ART 310A	HAX20870
Active Loudspeaker	RCF ART 310A	LKXN31648
Calibrator	Norsonic Type 1251	31716
Specialist Software	01dB-Metravib dBBati	V5.050

Table 2.1: Instrumentation used during testing

3.0 RESULTS

3.1 Sound Insulation Performance

Sound insulation tests were undertaken to cover an average of the boatyard wall construction. Results of the tests undertaken are shown in Table 3.1.

Test	Comments	Test Result
Test Before Upgrade Works	The Boatyard wall was a timber construction with windows and doors. Gaps were noted throughout the construction. To allow access to boats, the boatyard had a lock and an opening at one end.	D_w 19 dB

Table 3.1: Airborne Test Results

4.0 DISCUSSION

4.1 Established Criteria

It is understood that initial proposals were to improve the existing structure of the boatyard as follows:

Existing Wall:

Sleeper wall lined with 50mm studwork, 50mm lightweight insulation in the void, and a facing of 12mm cementitious board,

Existing single skin corrugated steel roof:

Addition of a suspended ceiling, 150mm below the existing skin, with 50mm lightweight insulation in the void and a ceiling of 12mm cementitious board.

The above works were predicted to provide a 28dB reduction to internal activities within the workshop.

4.2 Works Undertaken

Works undertaken have seen the removal of the timber wall construction, replaced with a timber stud wall, with facing panels to either side. The specification of the upgraded wall is as follows:

- 1 layer of Rockpanel Boarding (minimum density 8kg/m²),
- 100mm timber stud with 100mm mineral wool infill,
- 1 layer of Rockpanel Boarding (minimum density 8kg/m²).

Based on available information from laboratory tests on similar constructions, the above system would be expected to provide a laboratory sound insulation performance in the region R_w 44 dB.

The construction installed benefits from additional stud width and mineral wool infill to that proposed. The properly sealed layer of cementitious board is also expected to be an improvement on the proposal to retain the existing timber construction, which was noted to have numerous gaps between elements.

For the roof, a Casoline ceiling frame was installed below the roof skin, with 100mm mineral installed in the void, and lined with plasterboard.

The boat entry has been treated with a flexible curtain specified with a sound reduction of 35dB.

Based on the works undertaken, we would recommend that the wall construction is an improvement on that proposed, while the ceiling and access point works match the works initially proposed.

5.0 CONCLUSION

Sound Insulation tests were undertaken at Waterloo Wharf, Uxbridge in order to investigate and assess sound insulation concerns of the adjacent boatyard.

A rating of the airborne sound insulation performance of the wall has been tested and results presented in Table 3.1.

Works undertaken are demonstrated to be at least in line with those proposed in an initial noise impact assessment report.

Report by
Duncan Martin MIOA

Checked by
Florian Clement MIOA